Academic Program Review

ACADEMIC YEAR	2012-2013	☐ Basic Skills ☒ Transfer ☐ Career Technical Education (CTE)
PROGRAM	General Science	
DEPARTMENT	Science, Math, and Engineering	
DIVISION	Health and Sciences	
SUBMITTER	Daniel Gilison	

I. INSTITUTIONAL GOALS

INSTITUTIONAL GOAL **1**	**INSTITUTIONAL MISSION AND EFFECTIVENESS** – The College will maintain programs and services that focus on the mission of the College supported by data-driven assessments to measure student learning and student success.
INSTITUTIONAL GOAL **2**	**STUDENT LEARNING PROGRAMS AND SERVICES** – The College will maintain instructional programs and services which support student success and the attainment of student educational goals.
INSTITUTIONAL GOAL **3**	**RESOURCES** – The College will develop and manage human, technological, physical, and financial resources to effectively support the College mission and the campus learning environment.
INSTITUTIONAL GOAL **4**	**LEADERSHIP AND GOVERNANCE** – The Board of Trustees and the Superintendent/President will establish policies that assure the quality, integrity, and effectiveness of student learning programs and services, and the financial stability of the institution.

II. PROGRAM GOALS

A. PAST – EVALUATION OF PREVIOUS CYCLE OBJECTIVES/PROGRAM GOALS (SET IN PREVIOUS YEAR)

List your previous objectives/goals and associated Institutional Goals. All program goals must address at least one of the institutional goals.

PAST PROGRAM GOALS (Describe past program goals.)	**INSTITUTIONAL GOAL(S)** (Check all that apply.)

1	**PAST PROGRAM GOAL #1**	**INSTITUTIONAL GOAL(S)**
	Identify Program Goal from Last Program Review: Attract more students to upper-level chemistry courses by hiring a new chemistry instructor and physics instructor.	☐ 1 ☒ 2 ☐ 3 ☐ 4
	☐ Met ☒ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** A new chemistry instructor was hired, but there has not been a request, or demand, for a new physics instructor. Enrollment of upper-level chemistry classes is increasing, but demand for more sections of these courses has not increased at this time.	

2	PAST PROGRAM GOAL #2	INSTITUTIONAL GOAL(S)
	Identify Program Goal from Last Program Review: Incorporation of the new planetarium into the classroom curriculum of ASTR 100.	☐ 1 ☒ 2 ☒ 3 ☐ 4
	☒ Met ☐ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** The new planetarium is being used multiple times each semester for each ASTR 100 section.	

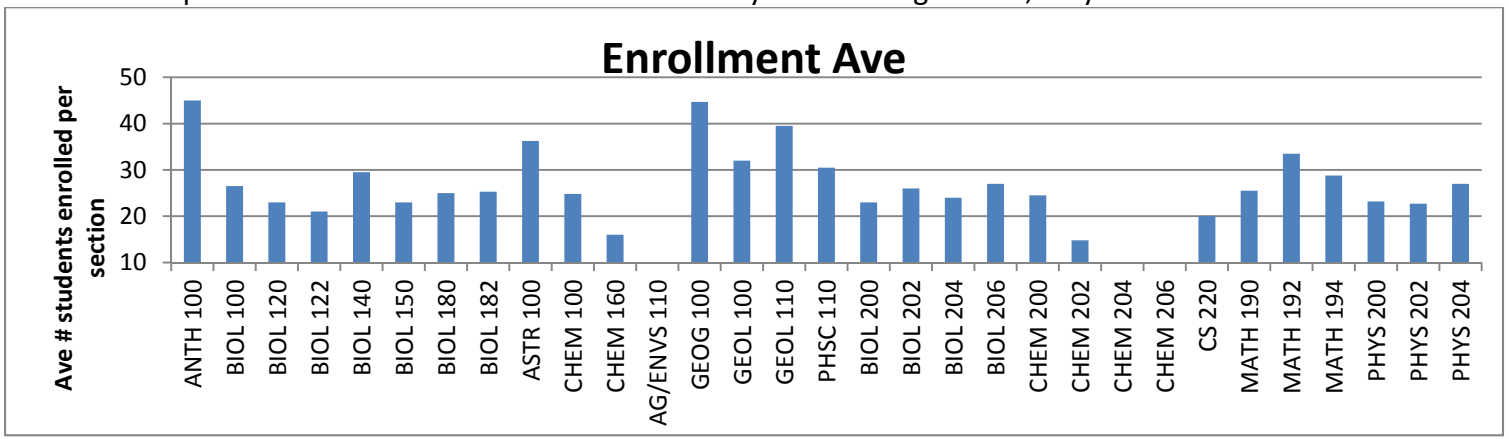
3	PAST PROGRAM GOAL #3	INSTITUTIONAL GOAL(S)
	Identify Program Goal from Last Program Review: Develop more course offerings in the following areas to expand the program: meteorology, oceanography and historical geology. This would require one additional full-time faculty member for the geology program to allow IVC to have a Geology major.	☐ 1 ☒ 2 ☒ 3 ☐ 4
	☐ Met ☒ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** There has been work on a new geology course, GEOL 130, but at the time, there is no demand for another full-time Geology faculty member. A part-time Geology member has been hired.	

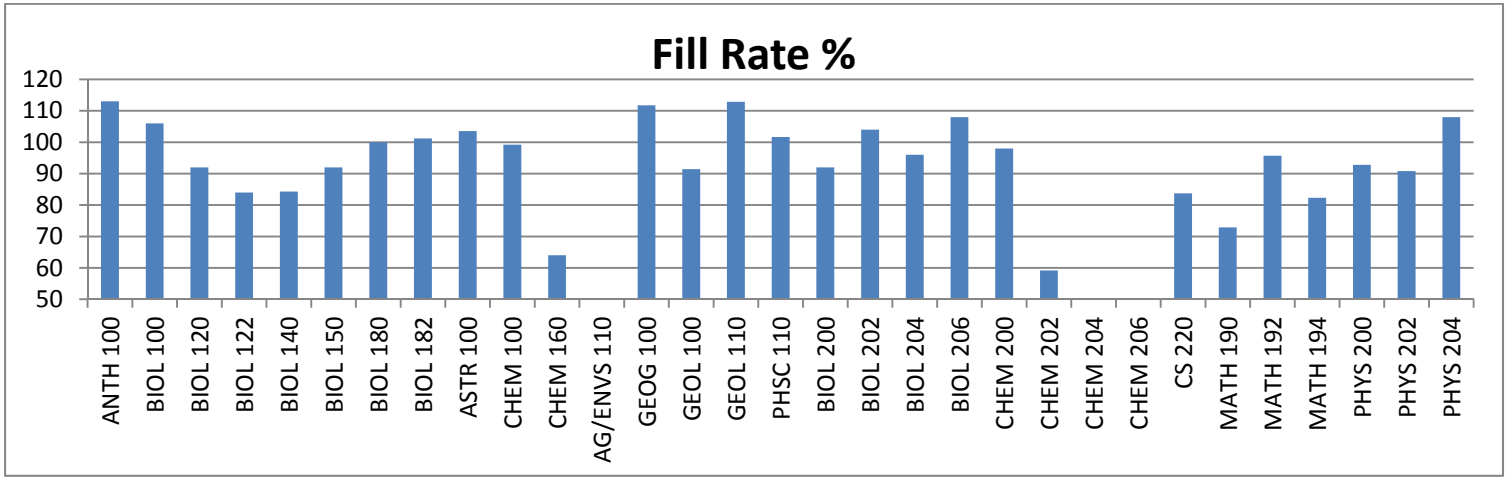
Comments:

B. PRESENT – DATA ANALYSIS AND PROGRAM HEALTH

1. Summarize and analyze all disaggregated data by day, evening, gender, ethnicity, and distance education regarding enrollments, fill rates, productivity, completion, success, retention, persistence, and transfer (complete a, b, & c). ***Attach graphs or trend data***.

   a. Discuss and chart the trends in enrollment and fill rate for each program by day and evening at the program level.
   Data was not provided for enrollment and fill rates for day and evening classes, only for overall sections of each course.

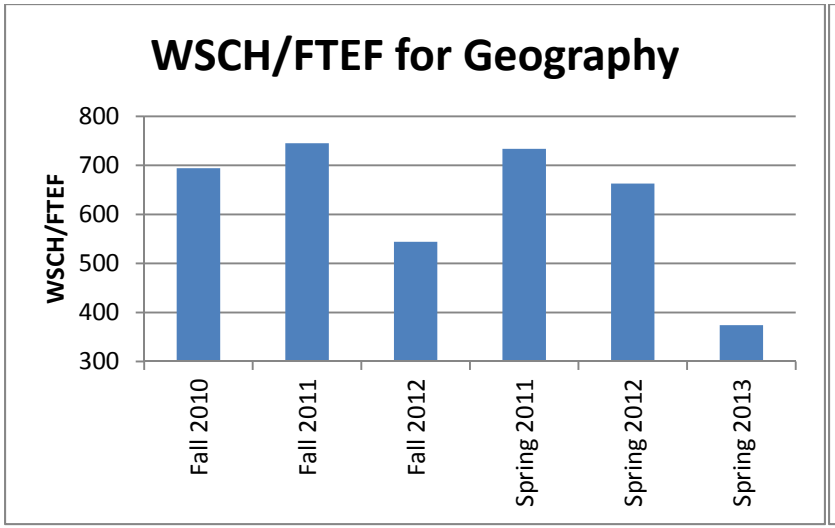


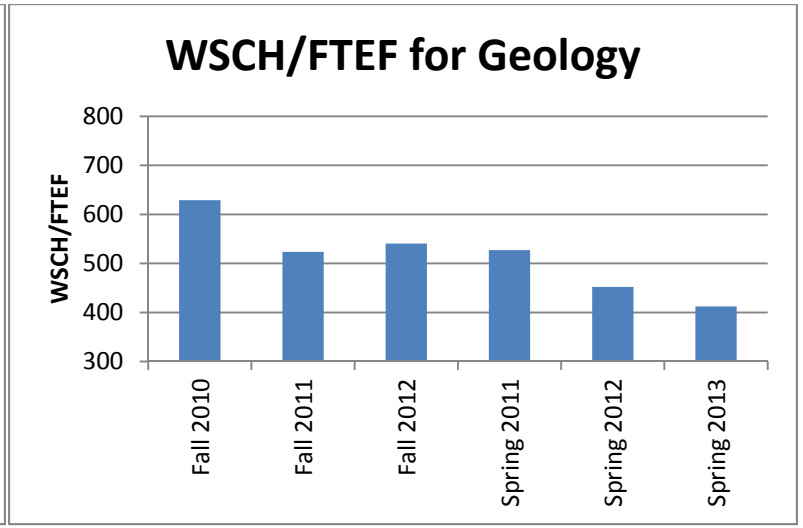


Enrollment levels and fill rates for AG/ENVS 110 were not complete in the data, so the information on those classes could not be provided here. CHEM 204 and CHEM 206 were not offered in the past 3 years, so there is no data for those classes.

Overall, enrollment and fill rates have been very high for science classes, with CHEM 160 and CHEM 202 having the lowest enrollments and fill rates. CHEM 160 was primarily for nursing students, and has since been dropped as a prerequisite for the nursing program. CHEM 202 enrollment has been decreasing over the years due to a lack of CHEM 100 sections feeding into CHEM 200 and CHEM 202.

b. What are the trends in productivity? (WSCH/FTEF) The goal is 525 as per state guidelines. A low number means that we are below target levels for productivity. For example, in a small class that has a mandated cap of 15 students, the fill rate may be 100% but the productivity number (WSCH/FTEF) will be very low. A class with a cap of 40 students with a 100% fill rate will have a productivity number close to or above 525.



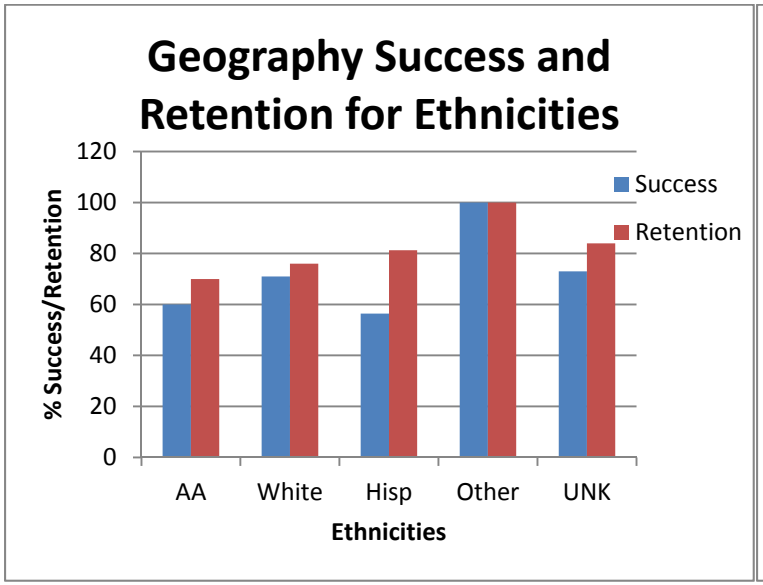


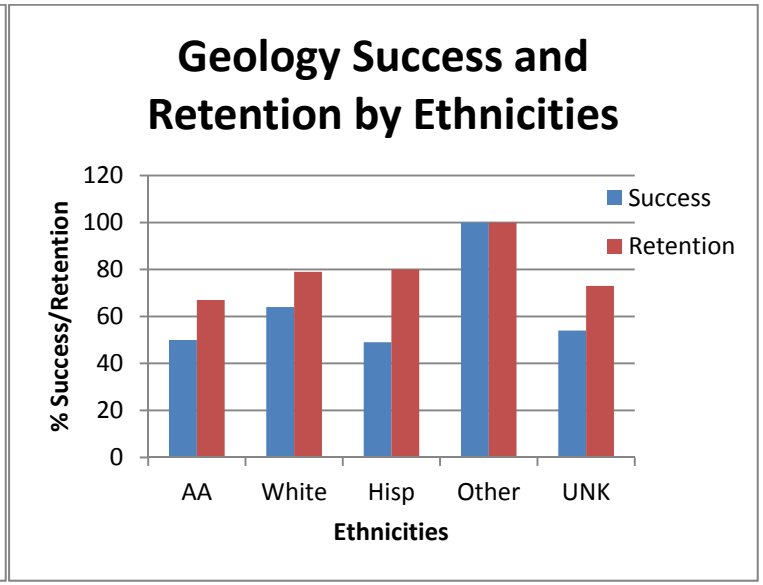
The only data given to analyze in the General Science program was for Geography and Geology. The average WSCH/FTEF in Geography is 626, and for 514 for Geology. The high value for Geography is due to class sections having a cap of 40, whereas Geology classes have a cap of 35.

c. Discuss and chart the success and retention rates by day, evening (extended day), and online classes in each program and identify gaps.

This data was not provided, so I am unable to discuss and chart this information.

d. Discuss and chart the success and retention rates in each program and identify gaps for five ethnic groups. (African-American, White, all Hispanics, Other, Unknown).





Due to the small number of African-American, White, Other, and Unknown students, any comparison between those groups and the Hispanic group would be statistically irrelevant.

e. Discuss the trends in the number of degrees or certificates awarded, if applicable. (You may be able to expand more about this in B.3 below.)

216 General Science degrees were awarded in the past 3 years. This is one of the more popular degrees, with many students

graduating from IVC with a General Science degree, as compared to other degrees.

f. What program changes, if any, will you recommend that you expect would have a positive effect on your students in your program, if applicable?

With the hiring of a new Chemistry instructor, we are continuing to increase the number of CHEM 100 sections offered. This will feed more students into the upper-level Chemistry classes, such as CHEM 200 and CHEM 202, which should help to increase enrollment in and demand for those courses.

2. Summarize revisions, additions, deletions, or alternate delivery methods to courses and/or program based on the last program review.

GEOL 110 was offered online for several years, but is in the process of being revamped with the intention of offering it again in the Fall 2014 semester. The use of the lecture hall (2734) for lecture-only and lab courses has helped with room scheduling, but most instructors have either found difficulty with teaching in the room, or simply do not prefer to teach there.

3. Evaluate the program's viability by addressing program completion, size (FTES), projections (growing/stable/declining), and quality of outcomes. For CTE programs, also include labor market projections, placement, and performance on external testing/exams (i.e. ASE, NABCEP) and industry-recognized credentials, placement, and performance on external testing or exams (NCLEX, ASC, NAP).

Overall, the General Science program is very healthy, and one of the more popular degrees at IVC. While areas within the degree may fluctuate in FTES, overall the program provides a great deal of FTES to the college. This is a stable program with potential for growth.

C. FUTURE – LIST OF "SMART" (SPECIFIC MEASURABLE ATTAINABLE RELEVANT TIME-LIMITED) PROGRAM OBJECTIVES FOR NEXT ACADEMIC YEAR TO ADDRESS PROGRAM IMPROVEMENT, GROWTH, OR UNMET NEEDS/GOALS. ALL PROGRAM GOALS MUST ADDRESS AT LEAST ONE OF THE INSTITUTIONAL GOALS.

FUTURE PROGRAM GOALS (Describe future program goals. List in order of budget priority.)	INSTITUTIONAL GOAL(S) (Check all that apply.)

1	FUTURE PROGRAM GOAL #1 Budget Priority #1	INSTITUTIONAL GOAL(S)
Identify Goal: Increase student transfer opportunities		☐ 1 ☒ 2 ☐ 3 ☐ 4
Objective: Increase number of sections of lower-level chemistry classes (CHEM 100, 200, 202), and offer upper-level chemistry classes (CHEM 204, 206).		
Task(s): Hire another Chemistry instructor to teach additional CHEM 100 and upper-level CHEM sections via a STEM grant proposal.		
Timeline: Expect to hire within 3 years.		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☐ One-Time ☒ Recurring	☒ Categorical Specify: STEM grant	☐ General Fund	☐ Facilities ☐ Marketing ☐ Technology ☐ Professional Development ☒ Staffing	$80,000

2	FUTURE PROGRAM GOAL #2 Budget Priority #2	INSTITUTIONAL GOAL(S)
Identify Goal: Increase hands-on learning situations in general science courses.		☐ 1 ☒ 2 ☒ 3 ☐ 4
Objective: Incorporate a laboratory component to ASTR 100.		
Task(s): 1) Find out which other schools have lab components for astronomy classes. 2) Determine what equipment would be needed, cost of equipment and maintenance agreements. 3) Make changes in curriculum to ASTR 100 to allow for lab component.		
Timeline: This would be expected to be completed within 3 years.		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☒ One-Time ☐ Recurring	☐ Categorical Specify:	☒ General Fund	☒ Facilities ☐ Marketing ☐ Technology ☐ Professional Development ☐ Staffing	$20,000

3	FUTURE PROGRAM GOAL #3 Budget Priority #3	INSTITUTIONAL GOAL(S)
Identify Goal: Consistency in education among multiple sections of the same course.		☐ 1 ☒ 2 ☐ 3 ☐ 4
Objective: Improved coordination and consistency of the level of instruction for the different sections of PHSC 110 taught by the different instructors.		
Task(s): 1) Instructors should share class schedules, assessments, etc to examine similarities and differences. 2) Student grade distributions should be examined for different sections to see what differences exist in student success. 3) Faculty work together to have more consistently structured classes.		
Timeline: This would be expected to be completed within 3 years.		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☐ One-Time ☐ Recurring	☐ Categorical Specify:	☐ General Fund	☐ Facilities ☐ Marketing ☐ Technology ☐ Professional Development ☐ Staffing	$0

TOTAL BUDGET REQUEST	$100,000

1. How will your enhanced budget request improve student success?

The budget requests will improve student success by providing more opportunity to take high-demand, impacted classes, such as CHEM 100, allow IVC to offer CHEM 204 and CHEM 206, (which have not been offered in several years), and to allow for more hands-on learning in typically lecture-only classes to help increase student success in the General Science courses.

Comments:

III. INSTITUTIONAL STUDENT LEARNING OUTCOMES (ISLOs)

ISLO 1	COMMUNICATION SKILLS
ISLO 2	CRITICAL THINKING SKILLS
ISLO 3	PERSONAL RESPONSIBILITY
ISLO 4	INFORMATION LITERACY
ISLO 5	GLOBAL AWARENESS

IV. PROGRAM LEARNING OUTCOMES (PLOs)

PROGRAM LEARNING OUTCOMES (Describe learning outcomes.)	**ISLO(S)** [Link PLO to appropriate ISLO(s).]

PLO 1	**PROGRAM LEARNING OUTCOME #1**	**ISLO(S)**
	Identify Program Outcome: Demonstrate understanding of scientific inquiry. Explain and apply the scientific method.	☐ ISLO 1 ☒ ISLO 2 ☐ ISLO 3 ☐ ISLO 4 ☐ ISLO 5
	Measurable Outcome Summary: 23/32 students earned at 70% or better on an assignment monitoring earthquakes throughout the semester and interpreting their data in GEOL 120.	
	☒ Met ☐ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** Students were successful at understanding the process of scientific inquiry and the scientific method.	

PLO 2	PROGRAM LEARNING OUTCOME #2	ISLO(S)
	Identify Program Outcome: Demonstrate Lab Skills. Provide experimental foundation for concepts introduced during lecture. Develop quantitative and qualitative skills of data analysis and ability to observe, interpret, communicate and synthesize various types of information from diverse sources.	☐ ISLO 1 ☒ ISLO 2 ☐ ISLO 3 ☐ ISLO 4 ☐ ISLO 5
	Measurable Outcome Summary: In CHEM 100, students performed a titration lab to answer a question. Between 77-83% of students were able to successfully answer the question.	
	☒ Met ☐ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** The students were successful in their ability to analyze lab data.	

PLO 3	PROGRAM LEARNING OUTCOME #3	ISLO(S)
	Identify Program Outcome: Understand Earth's Systems Interactions. Develop an understanding and appreciation of the natural world and interactions between and among Earth's systems (biosphere, hydrosphere, atmosphere, geosphere) and beyond (exosphere).	☐ ISLO 1 ☐ ISLO 2 ☐ ISLO 3 ☐ ISLO 4 ☒ ISLO 5
	Measurable Outcome Summary: In ASTR 100, students performed an exercise on lunar phases, and then given an exam question on positions of the Earth, Sun and Moon for different phases. 45% of students answered the question correctly.	
	☐ Met ☒ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** Instructors will share their data with other General Science instructors and develop ways to help reinforce these concepts to students.	

***** ATTACH PLO/SLO GRID *****

Course	# Credits	# SLOs Identified	Which SLO was assessed? Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013
ASTR100	3	3			1			2
BIOL100	4	4		4		1		2,3
BIOL120	4	4						1,2,3,4
BIOL122	4	4				1,2,3,4		
BIOL140	3	3		2				
BIOL150	3	3		1		3		2
BIOL180	4	4	3		2		1,4	
BIOL182	4	4		1		4		2,3
BIOL200	4	4	3	3	2	1	4	
BIOL202	4	4	2	1	4	3	1	
BIOL204	4	4	3	1	4	4	2	
BIOL206	4	4	4	2	3	1		4
CHEM100	4	4	Yes	1,2,3,4	3		1,3	1,2,3,4
CHEM160	5	5			4,5		1,2,3	
CHEM200	5	5	Yes	1,2,3,4,5	1		1,2,3,4,5	
CHEM202	5	5	Yes	1,2,3,4,5	3		1,3,4,5	
CHEM204	5	5						
CHEM206	5	5						
GEOL100	4	4				1	2	
GEOL110	3	3				2	1	
PHSC110	3	3			2			3
PHYS200	5	5			1,2,3,4,5	1,2,3,4,5	1,2,3,4,5	
PHYS202	5	5	1,2,3,4		1,2,3,4,5		1,2,3,4,5	
PHYS204	5	5		2,3,4,5		2,3,4,5		1,2,3,4,5
CS 220	4	4				1	2	3,4

MATH 190	5	5			1,2		3,4	5
MATH 192	5	5		4	4		4,5	1,2
MATH 194	5	5				1,2	3	4,5

		Which PLO was assessed?		
Program	# PLOs	Spring 2012	Fall 2012	Spring 2013
Gen Sci	3	1		2,3